RELATION BETWEEN STRENGTH OF THE TRADE WINDS OF THE NORTH ATLANTIC AND TEMPERATURE IN EUROPE.[1]

By P. H. GALLÉ.

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In a former paper[2] it was suggested that the effect of a change in the North Atlantic trade winds could be traced after 2 or 3 months in some hydrographical phenomena of northern Europe, the action taking place through the intermediary of the Gulf Stream.[2] A further question arises as to whether the winter temperature of northwestern Europe will not also be found to have a connection with trade-wind agencies. The problem is attacked by the method of correlation, coefficients being calculated between the winter temperature—December to February—at many stations in a comprehensive area which embraces Europe and Iceland, and the strength of the North Atlantic trades in different periods of the preceding summer. The 15 years 1899–1913 are used for the purpose. Taking Europe as a whole, it is found that the period May to October for the trades gives the highest correlation with European winter temperatures, June to November giving only slightly less. The values for the individual stations have been plotted on maps and lines of equal correlation drawn. It is found that positive departures from normal in the strength of the northeast trade are accompanied by positive departures of the winter temperature at places to the southeast of a line passing through the British Isles and central Norway and by negative temperature departures to the northwest of this line. The positive coefficients range up to +0.7 and the negative to −0.6. In considering what degree of accuracy could be obtained in forecasting the temperature of a coming winter from knowledge of the strength of the trades in the previous summer, the region which shows the highest correlation (central Germany) is chosen, and the deviations from the normal of the two elements are plotted on the same diagram for 16 years. It is found that in 14 cases out of the 16 the deviations show the same sign, and thus it would have been possible in 7 out of 8 cases to make a good forecast about the sign of the departure of the coming winter temperature. The standard deviation of the temperature is 1.3 degrees (C.), and, making use of the trade-wind strength, the error of estimate of the temperature will be 0.5 degree (C.).—*J. S. Di*[*nes*].

[1] Proc. K. Akad. Amsterdam, 1916, 18: 1435–1448.
[2] See abstract in this REVIEW, July, 1915, 43: 341.

MONTHLY DISTRIBUTION OF MEAN CLOUDINESS OVER FRANCE.[3]

By G. BIGOURDAN.

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This gives 13 charts showing the mean distribution, expressed in percentages, of the proportion of the sky covered with cloud for the 12 months and the whole year. On the average of the months, the Mediterranean coast has less than 35 per cent of cloud, and cloudiness increases with latitude generally up to about 65 per cent on the north coast of France. There are secondary maxima of cloud over the Pyrenees and the Jura and Vosges Mountains. The individual monthly charts are, on the whole, similar in character to the annual chart, the cloudiest month being January, with 40 per cent to more than 70 per cent of cloud, and the sunniest month July, with less than 25 per cent of cloud on the Riviera to less than 60 per cent on the north coast. June, July, and August are all very sunny months on the Mediterranean coast.—*R. C*[*orless*].

PATH OF SOUND RAYS IN AIR UNDER INFLUENCE OF TEMPERATURE.[4]

By V. KOMMERELL.

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A theoretical paper reaching the following results: If the temperature changes uniformly with height, the sound rays describe a cycloid convex downward if, as is usual, temperature falls with increasing height; but convex *upward* if the temperature increases with height. All these cycloids may be described by circles rolling on the horizontal line for which the temperature would be the absolute zero. Application of these principles to the zone of silences observed around sources of intense explosions are then discussed.—*E. H. B*[*arton*].

[3] Comptes rendus, Paris, Apr. 25, 1916, 162: 620–625.
[4] Physikal. Zeitsschr., May 1, 1916, 17: 172–175.